L. Loeselii (L.) MacM. Common. Oneida, Madison Co., *Maxon, House.* Kirkville, Onondaga Co., *Underwood.* Reported by Paine from Oneida Lake and from Herkimer County.

CALYPSO Salisb.

C. bulbosa (L.) Oakes. Mud Lake, Herkimer Co., *E. Hunt.*

APLECTRUM Nutt.

A. spicatum (Walt.) B.S.P. Rare. Jamesville, Onondaga Co., *Underwood.* Reported from several places in Oneida County by Paine.

Aplectrum spicatum pallidum var. nov. Similar to the type, but the flowers lemon-yellow or greenish-yellow, without the usual purplish spots. Type in the herbarium of Columbia University, collected by Professor Underwood at Jamesville, Onondaga County, 1890.

CORALLORHIZA R. Br.

C. Corallorhiza (L.) Karst. Common. Baldwinsville, *Beauchamp;* and Syracuse, Onondaga Co., *Underwood.* Reported from Oneida and Herkimer counties by Paine.

C. odontorhiza (Willd.) Nutt. Not rare. Syracuse, Onondaga Co., *Underwood.* Reported from Oneida County by Paine.

C. multiflora Nutt. Common. Oneida, Madison Co., *House.* Pompey and Syracuse, Onondaga Co., *Underwood.*

DEPARTMENT OF BOTANY, COLUMBIA UNIVERSITY,
April 1, 1903.

VAGARIES OF HEPATICA*

BY F. A. ROSS

(WITH FIGURES 1–45.)

No better inducement to companionship with plants could be desired than the discovery of a group of plants which seem to be at play. The mutation theory of de Vries gives new prom-

* Abstract of a paper read at the eighth winter meeting of the Vermont Botanical Club, January 17, 1903.

inence to individual variations in connection with the genesis of species, and the study of such variations becomes significantly important.

On a headland of Lake Champlain, the writer has discovered most interesting variations of our two species of *Hepatica*. While the divergence from the normal was mainly in the definite direction of increase in the number of leaf lobes, it was the anomalous and unexpected forms that roused the greatest interest and presented the greatest problem. These aberrant forms seemed like the capricious expression of superabundant spirits, and might have been partly due to energy and material left free by the absence of seed-formation. Rich and abundant nutriment was another factor, producing many large leaves. However fantastic or grotesque was the configuration of the leaf, it retained the characteristic texture and style of venation. Many leaves were flat, thin, broad, and sometimes glabrous; others were thick and puckered along the edges. In many cases there was no sinus at the insertion of leaf on petiole, showing such contrasting modes of insertion as are exhibited by Figs. 13 and 41. Position and prominence of the sinuses and number and relative size of lobes gave each leaf its peculiar shape. Broad and shallow sinus, deep and narrow cleft, lobes well separated or overlapping, broad and rounded or long and pointed, gave seemingly inexhaustible variety of interesting contours, ranging from reniform and indistinctly lobed leaves, two- to nine-lobed, two- and three-parted leaves, those with lobes metamorphosed into leaflets, to monstrous forms whose profiles gave caricatures of faces. The novelty of the odd shapes gave entertainment, while leaves like Figs. 33 and 36 pleased the eye by bilateral symmetry.

Over five hundred leaves, presenting a bewildering diversity of forms, were collected and mounted for deposit in the herbarium of the University of Vermont. With such an embarrassment of riches, it has been no light task to choose for reproduction the few that could be presented with this paper. It was deemed worth the trouble to present the venation of each leaf in order to depict its relation to the contour. Each figure is an approximate

facsimile of the mounted specimen, the outlines having been traced from the dried leaf and the venation reproduced by free-hand drawing. The plate gives a reduction of one half natural size.

Many leaves spanning more than four inches were found. The one represented by Fig. 29 lacked a full half inch of spreading half a foot from tip to tip. Figs. 1 and 36 are especially interesting, perhaps the one showing the simple ancestral form and the other an ambitious prefiguration of the future ideal. Figs. 19 and 39 have small and curious outgrowths on the margins. Figs. 38, 40, 41, 42 and 43 are of special interest. Fig. 42 is puzzling, and was taken from a plant showing normal leaves. Some plants had but a single leaf with more than three lobes, while others had leaves variously lobed. One plant had 3 five-, 1 six-, 1 seven-, 2 eight-, and 1 nine-lobed leaves; another 3 five-, 4 six-, 1 seven-, 1 eight-, and 3 nine-lobed.

The discovery of the particular locality where extreme variation occurred was too late in the season of 1902 to allow much observation of the flowers. Among the few found, many variations were noted. Dioecious forms of flowers occurred frequently. The pistillate flower was small and set in an overgrown involucre, while staminate flowers were large and the involucre correspondingly reduced. Fig. 44 shows the pistillate flower, and in the same figure is depicted a tendency to lobing seen in few of the sessile leaves of the involucre. Some flowers had four and five leaves in the involucre, and Fig. 45 shows another tendency of separation of flower and involucre.

The variations illustrated by the accompanying figures are certainly pronounced. Whether they are sufficiently self-perpetuating and sufficiently capable of segregation into definite groups to be worthy of consideration as possible mutants in a de Vriesian sense, the writer does not assume to say.

BURLINGTON, VERMONT,
March, 1903.

R.R. del.

LEAVES OF HEPATICA.